

March 1891.

Mr. Gledhill, *Satellites of Saturn etc.*

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D.M.	Month and Date. 1889.		Mag.	Mean R.A. Jan. 1, 1889.			Mean N.P.D. Jan. 1, 1889.		
				h	m	s	°	'	"
+ 10-171	Oct.	3	7	1	17	2'300	79	12	47'22
		7				2'121			47'14
		8				2'166			46'56
		9				2'215			47'84
		10				2'217			46'47
		14				2'175			46'55
		24				2'291			48'32
		25				2'083			47'85
		31				2'222			46'80
+ 16-154	Sept.	16	7.2	1	22	26'012	73	29	42'55
		17				25'922			44'25
		18				25'907			43'26
		20				26'057			43'54
		25				26'085			43'84
	Oct.	3				25'934			44'44
		7				25'965			44'17
		8				25'925			43'86
		9				25'958			44'52
		10				25'989			43'96
		14				26'000			43'74
		24				26'139			44'87
		25				25'873			44'83
		31				26'151			43'56

*Observations of the Satellites of Saturn: Conjunctions with the centre of the planet; of Occultations of Stars by the Moon; and of Phenomena of Jupiter's Satellites. Observed at Mr. E. Crossley's Observatory, Bermerside, Halifax, with the 9½-inch Cooke Refractor. Power 240. By J. Gledhill.*

1886, January 11.—Very faint. *Enceladus* s. Not up at 8<sup>h</sup> 50<sup>m</sup>. Up at 8<sup>h</sup> 55<sup>m</sup> (?) Past at 9<sup>h</sup> 5<sup>m</sup> (?). Certainly past at 9<sup>h</sup> 10<sup>m</sup>. G.M.T.

January 18.—*Tethys* s. Not up at 8<sup>h</sup> 50<sup>m</sup> and 8<sup>h</sup> 55<sup>m</sup>. Past at 9<sup>h</sup> 10<sup>m</sup>.

January 26.—*Rhea*. Up at 5<sup>h</sup> 50<sup>m</sup> (?), 5<sup>h</sup> 55<sup>m</sup> (?), 6<sup>h</sup> (?). Past at 6<sup>h</sup> 5<sup>m</sup>. *Enceladus* s. Very difficult owing to haze. 10<sup>h</sup> 30<sup>m</sup> not in line. 10<sup>h</sup> 45<sup>m</sup> past.

February 2.—*Enceladus* s. Not in line at 6<sup>h</sup> 45<sup>m</sup>. Clouds passing. Not up at 6<sup>h</sup> 50<sup>m</sup>. Past at 7<sup>h</sup> 5<sup>m</sup>.

February 3.—*Tethys* n. Not in line at 10<sup>h</sup>. Past at 10<sup>h</sup> 9<sup>m</sup>. Good definition.

February 4.—Good sky. *Enceladus* not seen. *Rhea* s. On line about 6<sup>h</sup> 37<sup>m</sup>. *Dione* s. Up at 7<sup>h</sup> 49<sup>m</sup>. *Tethys* s. Up at 8<sup>h</sup> 42<sup>m</sup>.

December 2 (with the 3-foot reflector).—*Dione* s. 13<sup>h</sup> not in line, nor at 13<sup>h</sup> 2<sup>m</sup>; probably in line between 13<sup>h</sup> 3<sup>m</sup> and 13<sup>h</sup> 7<sup>m</sup>. Past at 13<sup>h</sup> 10<sup>m</sup>. *Mimas*. Looked long and carefully for *Mimas*; saw it steadily at 13<sup>h</sup> 3<sup>m</sup>. *Tethys* n. Not up at 13<sup>h</sup> 45<sup>m</sup> and 13<sup>h</sup> 50<sup>m</sup>; up between 13<sup>h</sup> 53<sup>m</sup>, 13<sup>h</sup> 57<sup>m</sup>. Past at 14<sup>h</sup>.

December 4 (3-foot reflector).—*Mimas* not seen. *Tethys* n. Up at 11<sup>h</sup> 3<sup>m</sup> and past at 11<sup>h</sup> 10<sup>m</sup>. (Mr. Crossley at telescope.)

December 20.—*Dione* n. Not up at 7<sup>h</sup> 40<sup>m</sup>, nor at 7<sup>h</sup> 42<sup>m</sup>. Doubtful from 7<sup>h</sup> 45<sup>m</sup> to 7<sup>h</sup> 47<sup>m</sup>. Past at 7<sup>h</sup> 50<sup>m</sup> (?) Past at 7<sup>h</sup> 51<sup>m</sup>.

1887, January 12.—*Dione* s. Not in line at 13<sup>h</sup> 40<sup>m</sup>. Doubtful from 13<sup>h</sup> 45<sup>m</sup> to 13<sup>h</sup> 50<sup>m</sup>. Past at 13<sup>h</sup> 52<sup>m</sup>. Bad sky.

January 26.—*Tethys* n. Not in line at 7<sup>h</sup> 5<sup>m</sup>. Up from 7<sup>h</sup> 10<sup>m</sup> to 7<sup>h</sup> 15<sup>m</sup>. Past at 7<sup>h</sup> 17<sup>m</sup>. *Dione* s. Not in line before 7<sup>h</sup> 50<sup>m</sup>. Up between 7<sup>h</sup> 55<sup>m</sup> and 8<sup>h</sup>. Past at 8<sup>h</sup> 2<sup>m</sup> (?) Past at 8<sup>h</sup> 4<sup>m</sup>.

January 30.—*Dione* n. Not up at 8<sup>h</sup> 20<sup>m</sup>. Up between 8<sup>h</sup> 27<sup>m</sup> and 8<sup>h</sup> 33<sup>m</sup>. Past at 8<sup>h</sup> 35<sup>m</sup>.

February 5.—*Rhea* s. Not in line before 9<sup>h</sup> 23<sup>m</sup>. Probably up between 9<sup>h</sup> 25<sup>m</sup> and 9<sup>h</sup> 30<sup>m</sup>. Past at 9<sup>h</sup> 33<sup>m</sup>.

February 10.—*Dione* n. Up between 6<sup>h</sup> 57<sup>m</sup> and 7<sup>h</sup> 5<sup>m</sup>. Past at 7<sup>h</sup> 7<sup>m</sup> (?). Certainly past at 7<sup>h</sup> 10<sup>m</sup>. *Tethys* n. Not up at 9<sup>h</sup> 27<sup>m</sup>. Probably up between 9<sup>h</sup> 30<sup>m</sup> and 9<sup>h</sup> 35<sup>m</sup>.

February 11.—*Tethys* s. Not in line at 8<sup>h</sup>. In line between 8<sup>h</sup> 5<sup>m</sup> and 8<sup>h</sup> 10<sup>m</sup>. Past at 8<sup>h</sup> 17<sup>m</sup>. The satellite unusually bright. *Enceladus* also was very well seen.

February 12.—*Tethys* n. Not up at 6<sup>h</sup> 45<sup>m</sup>. Up between 6<sup>h</sup> 50<sup>m</sup> and 6<sup>h</sup> 55<sup>m</sup>. Past at 7<sup>h</sup> 3<sup>m</sup>.

February 14.—*Dione* s. Not on line at 9<sup>h</sup> 30<sup>m</sup>. Probably so between 9<sup>h</sup> 32<sup>m</sup> and 9<sup>h</sup> 40<sup>m</sup>. Past at 9<sup>h</sup> 45<sup>m</sup>. *Rhea* s. Up between 10<sup>h</sup> 10<sup>m</sup> and 10<sup>h</sup> 15<sup>m</sup>. Past at 10<sup>h</sup> 20<sup>m</sup>.

February 18.—*Dione* n. Not on line at 11<sup>h</sup> 50<sup>m</sup>. On between 11<sup>h</sup> 52<sup>m</sup> and 12<sup>h</sup> 5<sup>m</sup>. Past at 12<sup>h</sup> 12<sup>m</sup> (?).

February 26.—*Tethys* s. Not up at 10<sup>h</sup> 25<sup>m</sup>. Up between 10<sup>h</sup> 32<sup>m</sup> and 10<sup>h</sup> 40<sup>m</sup>. Past at 10<sup>h</sup> 42<sup>m</sup> (?).

February 27.—*Tethys* n. Not on line at 9<sup>h</sup> 10<sup>m</sup>. On between 9<sup>h</sup> 15<sup>m</sup> and 9<sup>h</sup> 20<sup>m</sup>.

March 29.—*Rhea* n. Not up at 7<sup>h</sup> 53<sup>m</sup>. On line between 7<sup>h</sup> 55<sup>m</sup> and 8<sup>h</sup> 5<sup>m</sup>. Past at 8<sup>h</sup> 10<sup>m</sup>.

March 31.—*Tethys* n. Not up at 11<sup>h</sup> 15<sup>m</sup>. Up between 11<sup>h</sup> 20<sup>m</sup> and 11<sup>h</sup> 25<sup>m</sup>. Past at 11<sup>h</sup> 30<sup>m</sup>.

April 1.—*Tethys* s. Not on line at 10<sup>h</sup> 5<sup>m</sup>. On between 10<sup>h</sup> 7<sup>m</sup> and 10<sup>h</sup> 12<sup>m</sup>. Past at 10<sup>h</sup> 15<sup>m</sup>.

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## Occultations of Stars etc.

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April 2.—*Tethys* n. On line between  $8^h 50^m$  and  $8^h 55^m$ . Past at  $9^h$ .

April 16.—*Rhea* n. Not up at  $9^h 50^m$ . Up between  $9^h 55^m$  and  $10^h 5^m$ . Past at  $10^h 10^m$ .

April 17.—*Tethys* n. On line between  $11^h 20^m$  and  $11^h 25^m$ . *Saturn* very low; satellite not well seen.

April 18.—*Dione* s. On line between  $8^h 27^m$  and  $8^h 37^m$ . Not well seen.

*Tethys* s. Judged on line between  $9^h 57^m$  and  $10^h 6^m$ . Bad sky.

April 19.—*Tethys* n. In conjunction between  $8^h 40^m$  and  $8^h 50^m$ . Planet low.

1890, March 29.—*Rhea* s. Not up at  $8^h 35^m$ . Past at  $8^h 43^m$ .

March 30.—*Enceladus* not seen.

April 2.—*Dione* n. Not up at  $8^h 55^m$ . Past at  $9^h 3^m$ .

*Tethys* in contact with the ball about  $9^h$  (?). Uncertain.

April 3.—*Tethys* disappeared at the ball about  $8^h 50^m$ .

April 4.—*Tethys*. Saw it well at  $7^h 30^m$  and  $7^h 40^m$  moving up to the ball. Could not see it at  $8^h$ .

April 7.—*Rhea* s. Not up at  $9^h 15^m$ . Past at  $9^h 20^m$ . Could not see *Enceladus* for some time. In conjunction, east, between  $12^h 45^m$  and  $12^h 50^m$ .

April 8.—Watched for the conjunction of *Dione* and *Japetus*. Clouds prevented observation, but saw the satellites  $10'' \pm$  apart about  $9^h$ .

May 13.—*Dione* n. In conjunction about  $10^h 15^m$

Occultations of stars by the Moon observed with the  $9\frac{1}{3}$ -inch Cooke refractor. Power 240:—

1887, February 6.—3 *Cancræ*. Disappearance  $9^h 16^m 32^s$ , G.M.T.

April 2.—B.A.C. 2,731. Disappearance  $9^h 15^m 12^s$ , G.M.T.

October 24.— $\theta$  *Capricorni*. Reappearance  $5^h 51^m 31^s$ , G.M.T.

October 28.—B.A.C. 81. Disappearance  $11^h 24^m 7^s$ , G.M.T.

1888, October 13. 20 *Capricorni*. Disappearance  $7^h 7^m 15^s$ , G.M.T.

1889, January 18.— $\theta$  *Libræ*. Disappearance  $10^h 50^m 28^s$ , G.M.T.

February 9.—*i Tauri*. Disappearance  $6^h 48^m 41^s$ , G.M.T. Reappearance  $7^h 56^m 39^s$ , G.M.T.

February 12.—63 *Geminorum*. Disappearance  $7^h 47^m 49^s$ , G.M.T.

1890, April 30.— $\nu$  *Virginis*. Disappearance  $11^h 53^m 27^s$ , G.M.T.

August 28.—37 *Capricorni*. Disappearance  $11^h 19^m 14^s$ , G.M.T.